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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant :	Michael A. SIRACKI	Art Unit :	3672
Serial No.:	10/634,629	Examiner :	Thompson, K.L.
Filed :	August 5, 2003	Confirmation No.:	7203
Title :	PREFORMED TOOTH FOR TOOTH BIT		

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APPELLANT'S BRIEF UNDER 37 CFR § 1.192

Pursuant to the requirements of 37 C.F.R. § 1.192, please consider the following document as the Appellant's Brief in the present application before the Board of Patent Appeals and Interferences (hereinafter "the Board").

TRANSMITTAL OF APPEAL BRIEF

Docket No. 05516/142002

In re Application of: Michael A. Siracki

Application No.	Filing Date	Examiner	Group Art Unit
10/634,629-Conf. #7203	August 5, 2003	K. L. Thompson	3672

Invention: PREFORMED TOOTH FOR TOOTH BIT

TO THE COMMISSIONER OF PATENTS:

Transmitted herewith is the Appeal Brief in this application, with respect to the Notice of Appeal filed: January 28, 2005 .

The fee for filing this Appeal Brief is $ 500.00 .

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Dated: March 28, 2005

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I hereby certify that this correspondence is being deposited with the U.S. Postal Service as Express Mail, Airbill No. EV 535679423 US, in an envelope addressed to: MS Appeal Brief - Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date shown below.

Dated: March 28, 2005 Signature: _____ (Jeannie D. Harris)

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I. Real Party in Interest

The real party in interest in the present application is Smith International, Inc., assignee of all rights and interests in the present application. Assignment to Smith International, Inc. was recorded in the United States Patent and Trademark Office on January 16, 2004, at Reel 014889, Frame 0328.

II. Related Appeals and Interferences

To the best knowledge of the Appellant and the Appellant's legal representative, there are no other appeals or interferences that will directly affect, be affected by, or have a bearing on the decision of the Board in the pending appeal.

III. Status of Claims

The present application, Serial No. 10/634,629 (the '629 Application), was filed on August 5, 2003. As filed, the '629 Application included claims 1-15, of which claims 1, 10, 13, and 15 were independent. Claims 1, 10, 13, and 15 were amended by way of the Response to the Office Action of May 4, 2004. Claims 1-15 are presently pending in the '629 Application. All pending claims were rejected in the Final Office Action of October 29, 2004. A Notice of Appeal was filed on January 28, 2005.

Claims 1-4, 6-10, and 13-15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,450,271 issued to Tibbitts et al. (hereinafter "Tibbitts") in view of U.S. Patent No. 6,206,115 issued to Overstreet et al. (hereinafter "Overstreet").

Claims 5, 11, and 12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tibbitts in view of U.S. Patent No. 4,940,099 issued to Deane et al. (hereinafter "Deanne").

IV. Status of Amendments

All amendments submitted to the Examiner during prosecution have been entered in the record. The claims of record in the present application are presented in Appendix A, *infra*.

V. Summary of the Invention

The invention described in the present application relates to a method of forming a tooth rock bit including the steps of attaching at least one predominantly steel cutting element to a cone and depositing a hardfacing layer on the predominantly steel cutting element prior to the attaching step. *See* Specification, paragraph [0003]-[0005], [0020], [0026]. Furthermore, the hardfacing layer includes a hardmetal coating. *Id.* at [0034]. The invention also relates to a tooth rock bit including a cone having a preformed predominantly steel cutting element attached to the surface. *Id.* at [0003]-[0005], [0041]. The predominantly steel cutting element includes a hardfacing layer, where the hardfacing layer is deposited prior to the cutting element being attached to the surface. *Id.* at [0046]. Figure 3 (reproduced below) shows a single tooth (50) disposed on a cone (52). *Id.* at [0034]. The tooth (50) has a hardfacing layer (54) deposited thereon.

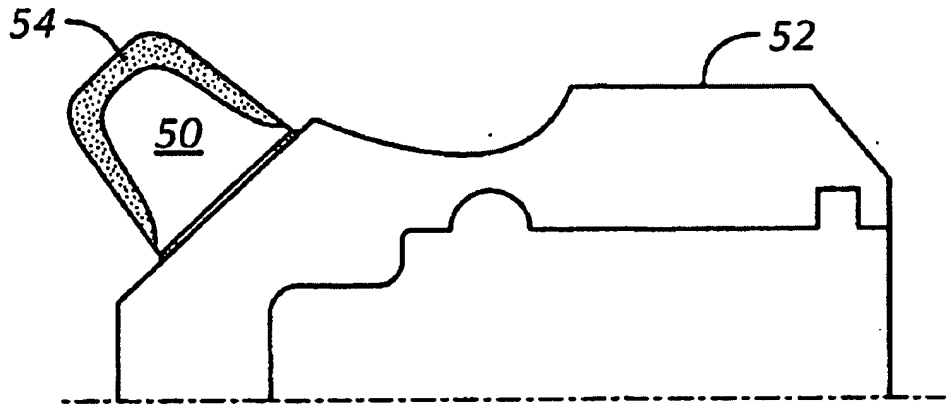

FIG. 3

Figures 4a and 4b (reproduced below) show a bit structure that includes a preformed cutting element (60) and preformed hardfacing layer (62). *Id.* at [0036]. The cutting element (60) is adapted to be inserted into the roller cone (70). *Id.* The cutting element is inserted into the hole (72) of the roller cone (70) after the hardfacing layer (62) is deposited on the cutting element (60). *Id.* at [0039]. The cutting element may be attached to the cone by various welding or brazing techniques. *Id.* Furthermore, because the teeth may be formed separately from the cone, the hardfacing layer may be deposited on at least one separately formed tooth at substantially the same time that the tooth is formed. *Id.* at [0040].

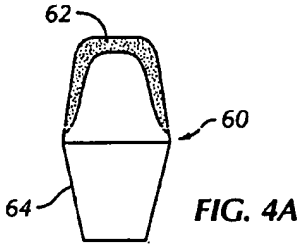

FIG. 4A

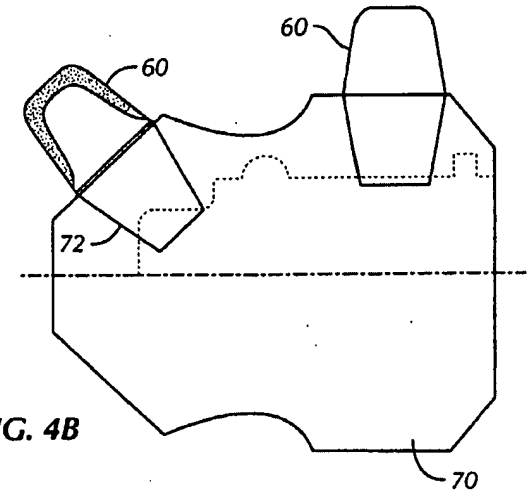

FIG. 4B

As stated in the background of the present application, a roller cone rock bit of the prior art is typically made of steel. *Id.* at [0003]. Such roller cone rock bit includes two types of bits that use two distinguishable types of cutting elements: a tungsten carbide insert bit, using separately formed tungsten carbide inserts, and a tooth bit using integrally formed cutting elements. *Id.* The cutting elements used with tooth bits are known as teeth and are typically machined or formed into the cone, and because they are integral with the steel cone, they are thus made of steel. *See id.* at [0003]-[0004]. Because of the softness of steel teeth, a hardfacing layer is applied to the surface of the steel teeth so as to reduce erosion and abrasion on the teeth. *See id.* at [0005]. However, difficulties arise in the application of the hardfacing to milled teeth resulting due to a less-than-satisfactory quality of the coating, specifically, in less than satisfactory thickness, uniformity, and coverage. *See id.* at [0018].

As is further described in the present application, embodiments of the present invention present advantages that are not present in the prior art. For example,

embodiments related to the claimed methods of forming a tooth rock bit may advantageously provide for an easier and more uniform application of hardfacing to individual steel teeth, rather than the teeth of the drill cone as a whole, which also may allow for an automated process. *See id.* at [0041]. Because the teeth are not integrally formed with the cone, individual teeth may be advantageously replaced. *See id.* at [0042]. Furthermore, tooth rock bits according to the present invention may include individual teeth to have cutting structures, as well as hardfacing compositions, unique to their particular locations on the drill bit. *Id.*

VI. Issues

The issues presented on appeal are:

1. Whether claims 1-4, 6-10, and 13-15 are unpatentable under 35 U.S.C. § 103(a) as being obvious in view of Tibbitts and Overstreet (*see* Final Office Action of October 29, 2004, pages 2-5);

2. Whether claims 5, 11, and 12 are unpatentable under 35 U.S.C. § 103(a) as being obvious in view of Tibbitts and Deane (*see* Final Office Action of October 29, 2004, pages 5-6).

VII. Grouping of Claims

Claims 1-4, 6-9 and 14 stand or fall together.

Claim 5 stands or falls by itself.

Claim 10 stands or falls or itself.

Claims 11-12 stand or fall together.

Claim 13 stands or falls by itself.

Claim 15 stands or falls by itself.

VIII. Argument

A. Claims 1-4, 6-10, and 13-15 are Patentable over Tibbitts and Overstreet under 35 U.S.C. § 103(a).

1. The Cited References Fail to Teach, Show, or Suggest All of the Limitations of Independent Claim 1 and Dependent Claims 2-4, 6-9 and 14.

The statutory test for obviousness denies patentability when "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art." 35 U.S.C. § 103(a) (2000). To determine patentability under § 103, the scope and content of the prior art must be determined; the differences between the prior art and the claims at issue must be ascertained; the level of ordinary skill in the art must be resolved; and secondary considerations of non-obviousness must be evaluated. *Graham v. John Deere*, 383 U.S. 1, 17 (1966). A *prima facie* case of obviousness requires a showing that there is a motivation or suggestion for one of ordinary skill in the art to modify or combine the references to carry out the claimed invention and that the prior art shows that one of ordinary skill in the art would have a reasonable expectation of success. *In re Vaeck*, 947 F.2d 488, 493 (Fed. Cir. 1991). The obviousness analysis does not determine whether the differences between the prior art and the claims would have been obvious; rather, it determines whether the claimed invention as a whole would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1537 (Fed. Cir. 1983).

In determining obviousness, prior art references must be considered in their entirety. *W.L. Gore Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1550 (Fed. Cir.

1983), *cert. denied*, 469 U.S. 851 (1984). "The mere fact that references can be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." *In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992). Further, a *prima facie* case of obviousness requires that all claim limitations be taught or suggested by the prior art. *See In re Royka*, 490 F.2d 981 (CCPA 1974); MPEP §§ 706.02(j), 2143.03. If even a single claim limitation is not taught or suggested by the prior art, then that claim cannot be obvious over the prior art. *Id.*

In the present case, the Examiner has failed to demonstrate that all claim limitations of independent claim 1 are taught or suggested by the combination of Tibbitts and Overstreet. Additionally, Tibbitts and Overstreet fail to suggest the requisite desirability of the claimed invention as a modification of the prior art. Claim 1 of the present application requires attaching at least one cutting element being predominantly steel to a surface of a cone and depositing a hardfacing layer on the at least one cutting element prior to the attaching, where the hardfacing layer comprises a hardmetal coating. Thus, claim 1 requires a preformed predominantly steel cutting element that is not integrally formed with the cone.

Tibbitts discloses: (1) integrally formed, steel teeth coated with a hardfacing; and (2) preformed carbide inserts coated with a hardfacing. *See* Tibbitts, Col. 9, lines 2-7, Col. 12, lines 53-58. Overstreet discloses integrally formed steel teeth having a shorter length than conventional steel teeth that are coated with thicker layer of hardfacing. *See* Overstreet, Col. 2, lines 35-44. While Tibbitts does disclose applying hardfacing to carbide inserts prior to attaching the inserts to the bit, there is nothing in either Tibbitts or Overstreet that would suggest to one of ordinary skill in the art to make predominantly

steel teeth that are preformed and not integrally formed with the cone.

As known in the art, conventional steel cutting elements are integrally formed with the bit, and conventional inserts are made of tungsten carbide. As pointed out in the Declaration of James Minikus, filed under 37 CFR § 1.132 in the Response to the Final Office Action dated October 29, 2004, when designing and/or manufacturing drill bits, those of ordinary skill in the art typically select from either insert-type cutting elements or a milled tooth bit, depending on the drilling application. *See* Declaration of James Minikus, Appendix B, *infra*. Thus, the two types of cutting elements are not interchangeable, nor are the compositions of the cutting elements interchangeable. Neither cited reference addresses or suggests altering the material of a preformed cutting element from tungsten carbide to steel, using steel teeth that are not integrally formed with the bit, or depositing a hardfacing layer on a predominantly steel cutting element when it is unattached to a drill bit. *See id.* The claimed invention is directed to a wholly new type of cutting element: a cutting element made predominantly of steel that is not integrally formed with the bit and that has hardfacing deposited thereupon prior to the attachment of the predominantly steel cutting element to the bit.

In the present case, the Examiner asserts Tibbitts as a primary reference, without considering the reference in its entirety. Specifically, the Examiner asserts that Tibbitts does not disclose a steel cutting element. *See* Final Office Action, at 2. While Tibbitts might not specifically disclose that its teeth are composed of steel, it does specify the teeth are integrally formed milled teeth, as known in the art. *See* Tibbitts, Col. 9, lines 2-7. As generally known in the art, milled teeth are steel because they are machined from a steel body. Overstreet demonstrates that the terms "milled teeth" and "steel teeth" are

used interchangeably in the art. *See* Overstreet, Col. 1, lines 10-15.

When viewed in its entirety, Tibbitts teaches that one of ordinary skill in the art may use either milled teeth or tungsten carbide inserts as cutting elements. Overstreet, in combination with Tibbitts, would suggest a modification to Tibbitts's teeth such that the milled teeth should be shorter and the hardfacing should be thicker. Further, as pointed out by James Minikus, who is one of ordinary skill in the art, the wear resistance of tungsten carbide bits out-performs milled tooth bits, even when hardfacing is applied to milled tooth bits. *See* Declaration of James Minikus, Appendix B, *infra*. Additionally, milled tooth bits often result in unsatisfactory hardfacing, especially when the amount of tungsten carbide in the hardfacing is increased in an attempt to increase wear resistance. *Id.* When Tibbitts and Overstreet are viewed in their entirety, there is nothing to indicate that one of ordinary skill in the art would do anything but continue to use either the more wear resistant tungsten carbide inserts or the less wear resistant integrally formed steel teeth. Therefore, in light of the above, claim 1 is not obvious because the cited references fail to teach all limitations of claim 1 and do not suggest a modification to tungsten carbide inserts or integrally formed steel teeth that would result in the claimed invention.

For the foregoing reasons, the combination of Tibbitts and Overstreet does not disclose the limitations of claim 1. Further, because a claim depending from an independent claim that is not obvious under 35 U.S.C. § 103(a) is also not obvious, *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988), dependent claims 2-4, 6-9, and 14 of the present invention are also patentable for at least the same reasons. Accordingly, reversal of the Examiner's 35 U.S.C. § 103(a) rejection of claims 1-4, 6-9, and 14 of the present application is respectfully requested.

2. The Cite References Fail to Teach, Show, or Suggest All of the Limitations of Independent Claim 10.

Claim 10 of the present application requires attaching a first cutting element and a second cutting element both being predominantly steel to a surface of a cone and depositing a hardfacing layer on the first cutting element and the second cutting element prior to the attaching, where the hardfacing layer includes a hardmetal coating. As discussed above, the combination of Tibbitts and Overstreet does not teach attaching at least one cutting element being predominantly steel and depositing a hardfacing layer on the cutting element prior to attaching the cutting element to the cone. Claim 10 stands separately from claim 1 by requiring the attachment of two cutting elements being substantially steel.

Tibbitts and Overstreet, either alone or in combination, do not teach, show, or suggest the limitations of claim 10. Therefore, Claim 10 is patentable in light of these reasons and the reasons demonstrated in Section VIII.A.1, *supra*. Accordingly, reversal of the Examiner's 35 U.S.C. § 103(a) rejection of claim 10 of the present application is respectfully requested.

3. The Cited References Fail to Teach, Show, or Suggest All of the Limitations of Independent Claim 13.

Claim 13 of the present application requires forming at least one cutting element being predominantly steel having a hardfacing layer, where the hardfacing layer comprises a hardmetal coating, attaching at least one cutting element to a surface of a cone, and prior to the attaching, depositing a layer of the hardfacing layer on the at least one cutting element at substantially the same time as the forming of the at least one cutting element. Claim 13 stands separately from claims 1 and 10 by requiring the

additional step of forming at least one cutting element being predominantly steel having a hardfacing layer. As discussed above, the combination of Tibbitts and Overstreet does not disclose the claim limitations of claim 1. Nor do Tibbitts and Overstreet disclose the additional step of forming a predominantly steel cutting element being having a hardfacing layer that is not integrally formed with the cone. Tibbitts and Overstreet never contemplated a preformed steel cutting element; rather, they address tungsten carbide inserts and milled teeth as conventionally understood by one in the art.

Tibbitts and Overstreet, either alone or in combination, do not teach, show, or suggest the limitations of claim 13. Therefore, Claim 13 is patentable in light of these reasons and the reasons demonstrated in Section VIII.A.1, *supra*. Accordingly, reversal of the Examiner's 35 U.S.C. § 103(a) rejection of claim 13 of the present application is respectfully requested.

4. The Cited References Fail to Teach, Show, or Suggest All of the Limitations of Independent Claim 15.

Claim 15 of the present application requires a cone having a surface and a preformed predominantly steel cutting element attached to said surface, where the preformed predominantly steel cutting element includes a hardfacing layer, where the hardfacing layer is deposited prior to the preformed cutting element being attached to said surface, and where the hardfacing layer includes a hardmetal coating. As discussed above, the combination of Tibbitts and Overstreet does not disclose the claim limitations of claim 1. Nor do Tibbitts and Overstreet disclose a tooth rock bit having a cone and a preformed predominantly steel cutting element having a layer of hardfacing deposited prior to the attachment of the preformed predominantly steel cutting element to the cone. Tibbitts and Overstreet never contemplated a preformed steel cutting element; rather,

they address tungsten carbide inserts and milled teeth as conventionally understood by one in the art.

Tibbitts and Overstreet, either alone or in combination, do not teach, show, or suggest the limitations of claim 15. Therefore, Claim 15 is patentable in light of these reasons and the reasons demonstrated in Section VIII.A.1, *supra*. Accordingly, reversal of the Examiner's 35 U.S.C. § 103(a) rejection of claim 15 of the present application is respectfully requested.

B. Claims 5, 11, and 12 are Patentable over Tibbitts and Deane under 35 U.S.C. § 103(a).

1. The Cited References Fail to Teach, Show, or Suggest All of the Limitations of Independent Claim 1 and Dependent Claim 5.

A *prima facie* case of obviousness requires that all claim limitations be taught or suggested by the prior art. *See In re Royka*, 490 F.2d 981 (CCPA 1974); MPEP §§ 706.02(j), 2143.03. In the present case, the Examiner has failed to demonstrate that all claim limitations of independent claim 1 and dependent claim 5 are taught by the combination of Tibbitts and Deane. Independent claim 1 of the present application requires attaching at least one cutting element being predominantly steel to a surface of a cone and depositing hardfacing layer on the at least one cutting element prior to the attaching, where the hardfacing layer comprises a hardmetal coating. Claim 5 is dependent upon claim 1, and thus all limitations of claim 1 are included in claim 5. However, the Examiner's rejection of claim 5 does not address the limitations of claim 1 or show how the combination of Tibbitts and Deane teaches the limitations of claim 1. Specifically, the combination of Tibbitts and Deane does not teach or suggest a predominantly steel cutting element that is attached to a cone after a hardfacing layer is

deposited thereupon.

Tibbitts, as discussed above, discloses (1) integrally formed, steel teeth coated with a hardfacing and (2) carbide inserts coated with a hardfacing. Deane discloses tungsten carbide inserts having a hardfacing layer thereupon, where the inserts are positioned on a roller cone according their hardnesses. There is nothing in either Tibbitts or Deane that would suggest one of ordinary skill in the art to make predominantly steel teeth, which are preformed and not integrally formed with the cone. Similar to the reasons discussed above in Section VIII.A.1, neither reference addresses or suggests altering the material of a preformed cutting element from tungsten carbide to steel, using steel teeth that are not integrally formed with the bit, or depositing a hardfacing layer on a predominantly steel cutting element when it is unattached to a drill bit. Thus, Tibbitts and Deane, either separately or in combination, do not teach or suggest a predominantly steel cutting element having a hardfacing layer deposited prior to the attachment of the predominantly steel cutting element to the surface of a cone. Deane fails to provide to Tibbitts what Overstreet lacks, and thus does not teach or suggest all of the limitations of claims 1 and 5.

Thus for the foregoing reasons, Tibbitts and Deane fail to disclose, either explicitly or impliedly, all the limitations of independent claim 1 of the present invention. Further, because a claim depending from an independent claim that is not obvious under 35 U.S.C. § 103(a) is also not obvious, *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988), dependent claim 5 of the present invention is also patentable for at least the same reasons. Accordingly, reversal of the Examiner's 35 U.S.C. § 103(a) rejection of claim 5 of the present application is respectfully requested.

2. The Cited References Fail to Teach, Show, or Suggest All of the Limitations of Independent Claim 10 and Dependent Claims 11, and 12.

Independent claim 10 of the present application requires attaching a first cutting element and a second cutting element both being predominantly steel to the surface of a cone and depositing a hardfacing layer on the first cutting element and the second cutting element prior to the attaching. Claims 12 and 12 are dependent upon claim 10, and thus all limitations of claim 10 are included in claims 11 and 12. However, the Examiner's rejections of claims 11 and 12 do not address the limitations of claim 10 or show how the combination of Tibbitts and Deane teaches the limitations of claim 10. Specifically, the combination of Tibbitts and Deane does not teach or suggest a first or second predominantly steel cutting element that are attached to a cone after a hardfacing layer is deposited thereupon. For the same reasons as discussed above in Sections VIII.A.2 and VIII.B.1, neither Tibbitts nor Deane, separately or in combination, teach a first and second predominantly steel cutting elements having a hardfacing layer deposited prior to the attachment of the predominantly steel cutting elements to the surface of a cone. Deane fails to provide to Tibbitts what Overstreet lacks, and thus does not teach or suggest all of the limitations of claims 10-12.

Thus for the foregoing reasons, Tibbitts and Deane fail to disclose, either explicitly or impliedly, all the limitations of independent claim 10 of the present invention. Further, because a claim depending from an independent claim that is not obvious under 35 U.S.C. § 103(a) is also not obvious, *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988), dependent claims 11 and 12 of the present invention are also patentable for at least the same reasons. Accordingly, reversal of the Examiner's 35 U.S.C. § 103(a) rejections of claims 11 and 12 of the present application is respectfully requested.

IX. Conclusion

The Summary of the Invention provided in Part V, *supra*, in combination with the arguments presented in Part VIII, *supra*, clearly show that claims 1-15 of the present application are patentable over the prior art of record. Therefore, Applicant respectfully requests that the Board reverse the Examiner's rejections of claims 1-15 under 35 U.S.C. § 103(a).

Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 05516.142002).

Respectfully submitted,

Date: 3/28

S. B. 45,525

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90582_1

Appendix A. Claims of Record in the Present Application

1. A method of forming a tooth rock bit, comprising:

attaching at least one cutting element being predominantly steel to a surface of a cone; and

depositing a hardfacing layer on the at least one cutting element prior to the attaching, wherein the hardfacing layer comprises a hardmetal coating.

2. The method of claim 1, wherein at the attaching comprises at least one selected from a group consisting of electron beam welding, friction welding, and brazing.

3. The method of claim 1, wherein the depositing the hardfacing layer comprises at least one selected from a group consisting of high velocity air fuel spraying, flame spray, plasma arc, plasma-transferred arc, sintering, furnace brazing, furnace fusing, pressure assisted sintering and reaction bonding.

4. The method of claim 1, wherein the hardfacing layer comprises at least one material selected from a group consisting of sintered tungsten carbide, cast tungsten carbide, and macro-crystalline tungsten carbide.

5. The method of claim 1, wherein the hardfacing layer is deposited to have a thickness between 0.030 in and 0.180 in.

6. The method of claim 1, wherein the hardfacing layer has a thickness dependent on properties of formation to be drilled by the tooth rock bit.

7. The method of claim 1, wherein the depositing of the hardfacing layer comprises applying the hardfacing layer to a leading face of the at least one tooth.

8. The method of claim 1, wherein the at least one tooth comprises a gage tooth.

9. The method of claim 1, wherein the depositing of the hardfacing layer comprises automatically applying the hardfacing layer.

10. A method of forming a tooth rock bit, comprising:

attaching a first cutting element and a second cutting element both being predominantly steel to a surface of a cone; and

depositing a hardfacing layer on the first cutting element and the second cutting element prior to the attaching, wherein the hardfacing layer includes a hardmetal coating.

11. The method of claim 11, wherein the hardfacing layer deposited on the first cutting element is different from the hardfacing layer deposited on the second cutting element.

12. The method of claim 10, wherein the depositing of the hardfacing layer on the first cutting element is applied differently from the hardfacing layer on the second cutting element.

13. A method of forming a tooth rock bit, comprising:

forming at least one cutting element being predominantly steel having a hardfacing layer, wherein the hardfacing layer comprises a hardmetal coating;

attaching at least one cutting element to a surface of a cone; and

prior to the attaching, depositing a layer of the hardfacing layer on the at least one cutting element at substantially the same time as the forming of the at least one cutting element.

14. The method of claim 1, wherein the at least one cutting element comprises a parent metal substrate and wherein the hardfacing layer comprises a hard metal composition.

15. A tooth rock bit, comprising:

a cone having a surface; and

a preformed predominantly steel cutting element attached to said surface, wherein the preformed predominantly steel cutting element comprises a hardfacing layer, wherein the hardfacing layer is deposited prior to the preformed

cutting element being attached to said surface and wherein the hardfacing layer comprises a hardmetal coating.

Appendix B. Declaration of James Minikus

U.S. Patent Application Serial No. 10/634,629
Attorney Docket No. 05516.142002

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant :	Michael A. SIRACKI	Art Unit :	3672
Serial No.:	10/634,629	Examiner :	Thompson, K.L.
Filed :	August 5, 2003	Confirmation No.:	7203
Title :	PREFORMED TOOTH FOR TOOTH BIT		

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DECLARATION OF JAMES CARL MINIKUS UNDER 37 CFR § 1.132

I, JAMES CARL MINIKUS hereby declare that:

1. My name is James Carl Minikus. I am over the age of eighteen years, of sound mind and competent to make this declaration. The facts stated herein are of my personal knowledge, and I know them to be true and correct.

2. I received a Bachelor of Science degree in Mechanical Engineering from California State University, Fullerton in May of 1992.

3. I have worked for Smith International for 23 years in various drafting, design, engineering and management roles, all involving Smith's roller cone drill bits. I have drafted numerous roller cone bit drawings, designed numerous roller cone bits, and now manage the roller cone drill bit engineering department.

4. At this time, I am an employee of Smith International, Inc. My present title is Director of Roller Cone Bit Engineering.

5. As Director of Roller Cone Bit Engineering, my responsibilities include (among other duties) managing the design, engineering, drawing preparation and document control for roller cone drill bits. I also support the manufacture and sale efforts by Smith of its roller cone bits.

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6. I am familiar with the above referanced patent application, and have reviewed the Examiner's rejections.

7. I am currently employed by Smith International, Inc.

8. As I understand, U.S. Patent No. 6,450,271 ("Tibbitts"), a primary teaching of Tibbitts, with respect to drill bits, is to provide a coating for bit surfaces exhibiting a relatively low adhesion, preferably nonwater-wettable, surface over at least a portion thereof. A surface treatment may comprise a treatment directly on a surface of a drill bit component but also a surface treatment on a surface of a preformed insert. Tibbitts involves cutting elements as known in the art: integrally formed mill tooth bits and preformed inserts.

9. As I understand U.S Patent No. 6,206,115 ("Overstreet"), a primary teaching of Overstreet, with respect to drill bits, is to provide a cutter that includes a plurality of teeth. The teeth include an underlying steel stub that is integrally formed with the cutter, a carburized layer and a hardfacing layer thereupon.

10. Generally speaking, roller cone milled tooth bits and roller cone tungsten carbide insert bits have each developed to improve wear resistance. The wear resistance of the tungsten carbide bits significantly out-performed milled tooth bits. Hardfacing materials and welding improvements improved the milled tooth performance, but not to the level of performance of tungsten carbide inserts. When one of ordinary skill in the art designs or manufactures a drill bit, he or she typically selects either insert-type cutting elements or milled tooth cutting elements, depending on the drilling application. The two types of bits are not viewed as being generally interchangeable.

11. It is known in the art that welding the hardfacing on a milled cone is difficult both in the aspect of welding and in control, resulting in non-uniform hardfacing thicknesses. Generally speaking, to gain increase wear resistance, higher percentages of tungsten carbide are used in the steel matrix of the hardfacing of the material. However, the difficulty in welding the hardfacing on a milled cone typically results in thermally damaged tungsten carbide

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particles which results in lower wear resistance. Thus, the amount of tungsten carbide in hardfacing is limited when welding the hardfacing on a milled cone.

12. As a person of at least ordinary skill in the art, I believe that neither Tibbitts nor Overstreet, alone or in combination show or suggest a method of forming a tooth rock bit that includes attaching a cutting element being predominantly steel to the surface of a cone and depositing a hardfacing layer prior to attaching the cutting element, as recited in the present claims.

13. Both Tibbitts and Overstreet are silent with respect to altering the material of a preformed cutting element, using steel teeth that are not integrally formed with a cutter, and depositing a hardfacing layer on a predominantly steel cutting element when it is unattached to a drill bit. The benefits and control of forming a pre-formed steel tooth bit that is deposited with a hardfacing layer prior to being attached to a drill bit are not taught in either Tibbitts or Overstreet, nor are they apparent to one of ordinary skill in the art.

I further declare that all statements made herein of my own knowledge are true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Respectfully submitted,

Date 17 DEC 04